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Craig Loschmann, Christopher R. Parsons and Melissa Siegel

Maastricht Economic and social Research institute on Innovation and Technology (UNU-MERIT)
email: info@merit.unu.edu | website: http://www.merit.unu.edu

Maastricht Graduate School of Governance (MGSoG)
email: info-governance@maastrichtuniversity.nl | website: http://mgsog.merit.unu.edu

Keizer Karelplein 19, 6211 TC Maastricht, The Netherlands
Tel: (31) (43) 388 4400, Fax: (31) (43) 388 4499

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Does Shelter Assistance Reduce Poverty in Afghanistan?

Craig Loschmann[†]*, Christopher R Parsons[‡] and Melissa Siegel[†]

Abstract

Forced migration, often resulting from violent conflict, imposes large economic costs on both sending and receiving countries, on those agencies that coordinate humanitarian services and most importantly upon the forced migrants themselves. Programmes encouraging the return of refugees are therefore potentially crucial interventions, which can result in all parties benefiting. In this paper, we assess the UNHCR post-return shelter assistance programme in Afghanistan between 2009 and 2011, the country most affected by refugee movements, where no less than one-third of the population is a returnee. Given the infeasibility of randomizing shelter assistance to those repatriated, we implement a variety of matching techniques to insulate our results from selection biases. Adopting a multidimensional approach, our results show that shelter assistance reduces multidimensional poverty by around six percentage points. This reduction in poverty is driven by particular indicators of deprivation including dietary diversity, food security and heating, all of which are shown to fall by five to six percent depending on the matching specification. The former results are particularly encouraging in the context of Afghanistan given the prevalence of chronic malnutrition in the country.

Keywords: Afghanistan, Civil Conflict, Displacement, IDP, Refugee, Return Migration, Shelter Assistance

JEL classification: F22, I3, I32

† Maastricht Graduate School of Governance (MGSoG) | UNU-MERIT, Keizer Karelplein 19, 6211 TC Maastricht, the Netherlands. ‡International Migration Institute (IMI), Oxford Department of International Development (QEH), University of Oxford, 3 Mansfield Road, Oxford OX1 3TB, UK.

*Corresponding author. Email: c.loschmann@maastrichtuniversity.nl

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1. Introduction

"*Civil wars and conflicts arguably inflict more suffering on humanity than any other social phenomenon*" (Blattman and Miguel, 2010: 47). A particular consequence of armed conflict is often forced migration, which imposes economically large burdens on refugee-receiving countries, represents significant losses for refugee-sending countries, entails substantial economic costs for responsible agencies like the UNHCR and UNRWA and above all, often destroys the lives of the refugees and internally displaced persons (IDPs) themselves. Should conditions in sending regions become suitably favourable, the successful return of forced migrants clearly constitutes a win-win-win-win scenario for the aforementioned parties. Unsurprisingly therefore, voluntary repatriation has all but been universally taken as the durable solution of choice to the so-called global 'refugee crisis' since the end of the Cold War (Black and Koser, 1999). While the process of repatriation is complex, 'post-return support' is widely acknowledged as important in achieving sustainable return and reintegration, a key ingredient of which is the resolution of lost housing and property (Leckie, 2000; Simmons, 2001). Given the recent history of displacement in Afghanistan – the country most affected by refugee movements and home to at least 660,000 IDPs[1] – shelter assistance has been publicized as one of the top priorities of the Afghan government.[2] In this paper we conduct the first judicious analysis of the impact of UNHCR shelter assistance on the overall well-being of recipient households.

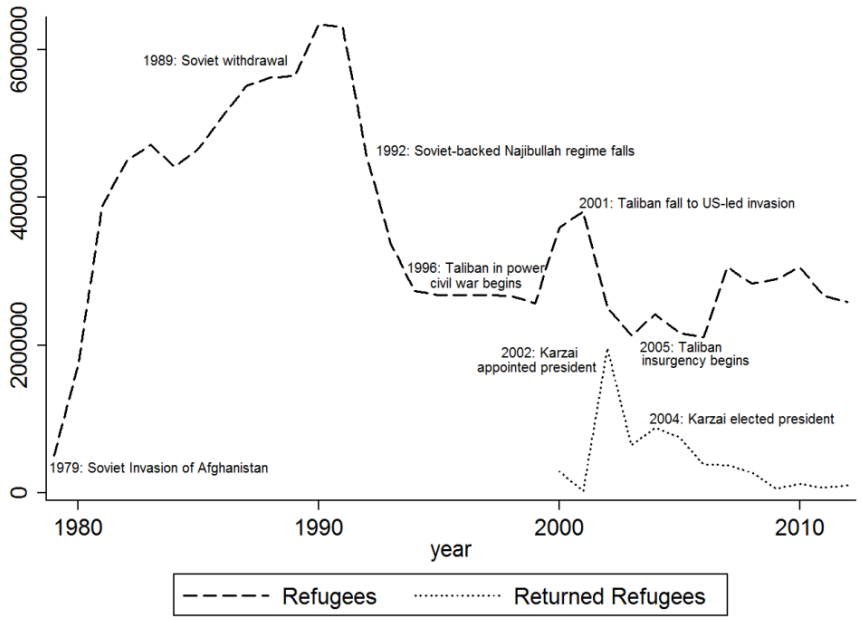
Forced migration is a particular issue for developing countries since they are the main source of refugees, host to over 80 per cent of all refugees globally and home to the overwhelming majority of IDPs. In 2012, Afghanistan remained the leading source country of refugees in the world with nearly 2.6 million of its citizens, or nine per cent of its total population, registered abroad with UNHCR (see Figure 1). The main host countries of Afghan refugees are neighbouring Pakistan and Iran, 1.6 million and 800,000 respectively, although the true figure is likely far higher since equivalent numbers of unregistered refugees are also present in both countries (Tyler, 2014). Given the prevalence of return over the years, Afghanistan also lays claim to the largest refugee repatriation operation in the world (O'Leary, 2014). Today around one-third of the Afghan population is a returnee. Moreover, the available data for IDPs show that even though the number of internally displaced declined rapidly post-2001 after reaching a high of 1.2 million during the American-led invasion of the country, internal displacement has been once again steadily rising since the revival of the Taliban insurgency in 2005 (see Figure A1 in the appendix).

Given the occurrence of forced migration in Afghanistan, it is important to emphasize how costly it is for all parties. In 2013, Pakistani Minister for States and Frontier Regions, Abdul Qadir Baloch, bemoaned the spiralling costs of Pakistan hosting Afghan refugees that he estimated had totalled some $200 billion over a 30 year period (*The Express Tribune*, 2013). If spread equally across years this figure equates to almost five per cent of Pakistan's annual GDP in 2012. This is on top of the costs of accommodating forced migrants borne by UNHCR which in 2012 totalled some $50 million in Iran and over $133 million in Pakistan. From a sending country perspective, a back-of-the-envelope calculation suggests that should the remaining 2.6 million officially recorded Afghan refugees abroad return home to earn the mean income across Afghanistan in 2010, $687 by World Bank estimates, the foregone earnings of those refugees would equate to around nine per cent of Afghan GDP in 2012, $20.5 billion. Such a loss would

[1] http://www.internal-displacement.org/.
[2] Afghanistan has a separate Ministry of Refugees and Repatriation.

in fact be far larger when compounded over the many years that the refugees have resided abroad.[3] Of course the true economic costs for sending countries are far higher than can simply be captured through a crude approximation of lost earnings. Forced migrants also abandon their homes resulting in an instantaneous loss of wealth, leave behind their land and other productive assets stemming any economic returns previously derived from them and subsequently reduce investment in other productive activities (Ibáñez and Moya, 2010). Moreover social institutions for community risk-sharing are often destroyed such that income shocks likely impact upon household consumption directly. Households may therefore adopt costly strategies to smooth consumption such as selling productive assets (Rosenzweig and Wolpin, 1993) or foregoing more profitable but riskier activities to smooth income, like the cultivation of a particular crop (Morduch, 1995). Indeed such falls in consumption are likely to be even more severe among vulnerable subgroups, for example as during the severe drought in Burkina Faso in the first half of the nineteen-eighties (Kazianga and Udry, 2006).

Figure 1: Afghan refugee and return refugee stocks, 1979-2012



Source: UNHCR (2014)

Very much related to the prevalence of forced migration in Afghanistan are the everyday living conditions of the population, which are among the worst in the world. The country ranks 175 out of 187 in the Human Development Index[4] and despite modest developmental progress in recent years in health, education and access to safe drinking water; the most recent National Risk and Vulnerability Assessment in 2011/2012 details stagnation or deterioration in food security and poverty. The report estimates that nearly one third of the population, some 7.6 million people, have insufficient caloric intake; while one

[3] Since not all Afghans will want to or will be able to return home and given that around 50 per cent of Afghan refugees are under 18, this figure may be far lower, but we cannot know to what extent this calculation would be counterbalanced by the large under-estimate of Afghan refugees abroad. Nonetheless, such calculations still prove indicative.

[4] See: http://hdr.undp.org/en/data.

fifth, 4.9 million people, have insufficient protein consumption (CSO, 2014: xviii). Such chronic malnutrition among Afghan children - one of the world's highest - leads to stunting, lower lifetime productivity and in turn lower economic growth (Alderman et al., 2006; Bundervoet et al., 2009).[5]

In this paper, we draw on unique survey data collected in Afghanistan in 2012, to evaluate UNHCR shelter assistance programmes that took place between 2009 and 2011. The programme's objective was to contribute to sustainable return and reintegration, by improving socio-economic conditions and the potential of benefiting households' livelihoods. Despite their perceived importance, shelter assistance interventions have yet to be subjected to rigorous assessment. Where evaluations have been carried out (UNHCR, 2005; Ferretti and Ashmore, 2010; GHK Consulting, 2012), little effort has been made to establish causal inference. Our analysis uses matching techniques given the non-randomness of the treatment group, to consider the broader impact of shelter assistance on household well-being. Our primary objective is to assess whether shelter assistance realizes UNHCR's stated aims. To this end, we first adopt a multidimensional approach to poverty measurement, one based upon three principal dimensions: economic welfare, health and education and basic services; before delving further into the various constituent elements of these indices in order to gain the most holistic understand of shelter impact.

Our paper contributes to the literatures on migrant/refugee return, civil conflict and impact evaluation. In terms of the return literature, our paper is more closely related to the literature that explores the voluntary return of refugees and asylum-seekers (Black and Koser, 1999; Koser, 2001; Black et al., 2004; Black and Gent, 2006) - albeit differentiated by empirically testing the impact of post-return programmes as opposed to discussing them more broadly - in comparison with the economics literature on return for example, which focuses, although not exclusively, upon the conditions under which migrants return home (see for example Stark, 1992; Dustmann, 1997; Bijwaard et al., 2014). The burgeoning economic literature on civil conflict predominantly concerns the causes and consequences of war (Blattman and Miguel, 2010). This paper speaks indirectly to both; first by assessing the efficacy of shelter programmes in Afghanistan we examine one type of policy that attempts to deal with one of the consequences of civil war, i.e. forced migration. Secondly, since post-return programmes also aim to reduce poverty, if successful they could also be argued to be an important ingredient in reducing the probability of future civil wars. The paper also contributes to the voluminous literature on impact evaluations using household level data (see for example Banerjee and Duflo, 2011). While myriad publications examine the poverty-reducing effects of for example agricultural (Becerril and Abdulai, 2010), infrastructure (Jalan and Ravallion, 2003) and microfinance (Imai and Azam, 2010) projects; to the authors' knowledge, this is the first paper to evaluate shelter assistance in a (post-) conflict environment where the absence of basic shelter and land is routinely noted as a significant concern (Reed and Foley, 2009). Specifically, we employ a variety of propensity score matching techniques to compare similar beneficiary and non-beneficiary households based on observable characteristics, thereby allowing us to assess the programmes' impact on household well-being with minimized selection biases.

Our results provide evidence that shelter assistance has a statistically significant and negative effect on poverty, meaning a poverty reducing effect. This is all the more important since some believe, despite

[5] UNICEF (2009:11) reports that Afghanistan has the highest prevalence of stunting in the world among children under five years old.

large aid inflows to Afghanistan post-2001, that foreign assistance has had a negligible effects on poverty levels (O'Leary, 2014). From a multidimensional perspective, beneficiary households are six percentage points less poor than their non-beneficiary counterparts, specifically between five and six per cent less deprived in terms of dietary diversity, food security and heating. Given the severity of chronic malnutrition throughout Afghanistan, our results regarding food security and dietary diversity are particularly encouraging. Overall however, the shelter assistance programmes may have fallen short of their own overly-ambitious objectives, namely to greatly improve the socio-economic condition and thus livelihood potential of benefiting households.

The remainder of this article is structured as follows. In the next Section we briefly review recent migration trends in Afghanistan and provide details of the UNHCR shelter assistance programme. In Section 3 we discuss the construction of our poverty measures, while Section 4 is reserved for examining our data. The following section discusses our empirical strategy, the results from which we explore in Section 6. Finally we conclude.

2. Forced Displacement, Repatriation and Shelter Assistance

A recent migration history of Afghanistan

The protracted conflict that has engulfed Afghanistan since the late 1970s, in tandem with the accompanying economic destitution, has resulted in one of the worst episodes of forced displacement in recent history, both internally and externally. During the decade-long-Soviet incursion (1979-1989), an estimated 5.8 million individuals were exiled in neighbouring Pakistan and Iran (CMI, 2008), while another 2 million were roughly thought to be internally displaced (Kuschminder and Dora, 2009). Despite a modest lull in displacement around the time of Soviet retreat in 1989, movement picked up once again in the years that followed due to the increasingly violent fighting between rival mujahedeen factions and the Soviet-backed Najibullah regime. Between 1990 and 1991, the official refugee count peaked above 6.3 million individuals as indicated in Figure 1. When the Najibullah government fell in 1992, the country experienced a massive influx of returning refugees, with more than half of those abroad at the time repatriating within two years. This return movement trickled to a stop during the ensuing Taliban rule from 1996 to 2001, although the US-led ouster of their regime post-9/11 quickly led to another large-scale repatriation effort from around the world. Overall, more than 5.6 million refugees are believed to have voluntarily returned from abroad after 2002 and another one million IDPs have made their way back to their communities of origin. More recently the numbers of individuals repatriating both from abroad and internally have been noticeably lower. While the total number of refugees outside of Afghanistan has not shown a noticeable increase as of late, the number of internally displaced is once again on the rise, leading many relief agencies to shift priorities towards this particularly vulnerable group (see Figure A1 in the appendix).

Shelter Assistance in Afghanistan

One of the many consequences of years of conflict and displacement in Afghanistan has been the lack of housing and land due to systematic destruction, neglect and deterioration (Macdonald, 2010; 2011). Data

from a number of sources estimates that around 500,000 homes have been either partially or totally destroyed (UNOCHA, 2009; UNHCR, 2011). Shelter provision is therefore perceived as a fundamental channel through which to support the livelihood potential of whole families and more generally the socio-economic development of the most adversely affected communities. Under this premise, UNHCR has established shelter assistance programmes explicitly targeting returned refugees and IDPs in areas of high return.[6] The underlying objective of these programmes is sustainable return and reintegration, "thereby diminishing the potential for secondary displacement, return to host countries and for disenfranchised youth to join militant or criminal networks" (UNHCR, 2012b: 2-3). Since 2002, this programme has been the cornerstone of UNHCR's assistance to voluntary returnees, leading to the construction of more than 220,000 shelters.

In practice, the shelter assistance programme follows a self-help model in which beneficiaries construct their own accommodation following stipulated guidelines. The main shelter design is a two-room unit which includes a corridor and external latrine. In recent years, a one-room unit or an additional room to an existing house became available to accommodate emergency situations, mostly for the internally displaced or those located in an urban setting. This variety in possible accommodation allows for greater flexibility across diverse geographical locations across which beneficiaries' needs may differ. The support package mostly consists of essential construction materials e.g. tools, roofing beams, doors, windows etc. Cash grants are also available on a case-by-case basis in the event that additional materials or labour are deemed necessary. Such assistance is extremely rare however, since UNHCR and their implementing partners are averse to the cash-based approach, due to the apparent risk of misuse.[7]

The shelter assistance programme is considered a community-based intervention such that the community itself is expected to identify eligible households and bring them to the attention of a local Beneficiary Selection Committee that comprises local leaders and representatives of implementing partners.[8] Eligibility for the programme initially required potential beneficiary households to have an officially recognized[9] returned refugee or internally displaced person as a member. An evolving emphasis on vulnerability gradually widened selection to incorporate other at-risk households beyond this original scope however. The vulnerability criterion follows that of the 'extremely vulnerable individual' definition and includes those who may be in life threatening situations, unable to help themselves and those lacking family and community support or suffering from physical or mental trauma (UNHCR, 2012a).[10] Households that meet the vulnerability criterion but which do not contain any returned refugees or IDPs are thus still eligible for assistance. Even though access to land on which to build shelter is an official

[6] A number of other stakeholders including the Norwegian Refugee Council (NRC), the International Organization for Migration (IOM) and UN-HABITAT have also been involved, but their activities are concentrated solely in Nangahar Province, such that we focus upon the work of the UNHCR in this paper.

[7] These views are corroborated by field observations made by the in-country team and subsequently recorded in the final report, detailing for example that cash grants given in order to purchase high quality materials like glass windows, were at times used for more immediate needs like food and water (MGSoG and Samuel Hall, 2013: 27).

[8] The central role of local leaders within the selection process opens up room for potential nepotism regarding households receiving shelter assistance even if they are not officially eligible. While we cannot categorically discount such practices taking place, our matching approach should reduce any bias in our estimates due to such inappropriate selection (on any observables).

[9] Officially recognized means the individual owns a "voluntary repatriation form" issued by UNHCR.

[10] More recently the 'extremely vulnerable individual' concept has been referred to as "persons with specific needs", yet this modest change had not taken place by the final year under study, 2011.

requirement, those not owning land may qualify for land allocation allowing them the opportunity to be provided shelter assistance as well. As such, although returned refugees and IDPs with access to land are the official targets of the programmes, overall eligibility is rather broader, permitting any vulnerable household in the community to be potentially eligible for shelter assistance (MGSoG and Samuel Hall, 2013).

Whether the programme on the whole contributes to poverty reduction and the broader overarching objectives of the UNHCR remains an empirical question. The expectation is that by providing shelter where none is available, beneficiaries will have a socio-economic foundation from which to improve their livelihood potential (UNHCR, 2011). Given this broad ambition we adopt a multidimensional approach to poverty measurement, the subject to which we now turn.

3. Poverty Measures

We adopt a multidimensional approach when measuring poverty, one pioneered by the Oxford Poverty & Human Development Initiative (OPHI) in conjunction with the United Nations Development Programme (UNDP) for their Human Development Reports. The objective of measuring well-being or poverty - inherently two sides of the same coin - in a multidimensional manner, is to move beyond simplistic income-based measurements derived from a single variable. This type of approach is arguably more relevant for analysing programmes such as that of the UNHCR, the objectives of which are multifaceted.

Table 1: Dimensions, Individual Indicators and Thresholds for Household Deprivation

Dimension	Indicator	Household is deprived if…
Dimension 1: Economic Welfare	-Debt Ratio	…the debt-to-monthly income ratio is greater than 2
	-Sources of Income	…has fewer than 2 sources of income by adults
	-Assets	…owns fewer than 2 types of assets from list of 8[11]
Dimension 2: Health & Education	-Dietary Diversity	…has not eaten meat at least once in the last week
	-Food Security	…cannot satisfy food needs more than 3 times/month
	-School Attendance	…school-aged children do not attend school
Dimension 3: Basic Services	-Electricity	…does not have electricity
	-Clean Drinking Water	…does not have free and potable water
	-Heating	…does not have heating

Our outcome variables encompass a broad set of socio-economic indicators within the principle dimensions of economic welfare, health and education and basic services. The indicators are chosen to be wide-ranging within the confines of the available data, while additionally encapsulating how shelter assistance might otherwise influence household well-being indirectly. Cut-offs categorizing a household as deprived adhere to common standards where appropriate and where ambiguous we use past literature to guide us (see Table 1).

We implement the Alkire and Foster (2011) dual cut-off method to categorize a household as dimensionally and multidimensionally poor or otherwise. We first adopt the thresholds detailed in Table 1

[11] List of eight possible assets include: livestock, fridge, television, radio, gas oven, bicycle, motorcycle and car.

for each individual deprivation indicator. We then apply a generalized cut-off to define multidimensional poverty set at 33 per cent.[12] A household is categorized as 'in-poverty' both within and across dimensions if deprived in over a third of individual indicators. Formally, the dimensional poverty index (*DPI*) for dimension *d* is expressed as:

$$DPI_d = \frac{1}{n} \sum_{i=1}^{n} DP_{id}, \text{ where}$$
$$DP_{id} = 1 \; if \; \sum_{x=1}^{d} w_x I_{ix} > k.$$

Where n represents the number of households, DP_{id} is a binary variable for dimensional poverty for house i along poverty dimension d, taking a value of one if the aggregated and weighted indicators in that dimension, $w_x I_{ix}$, is greater than the cutoff, k. Each indicator within a dimension is equally-weighted and sums up to one.

In the second stage, we aggregate all indicators across the various dimensions in a similar procedure where the essential difference is that dimensions, as opposed to indicators, are now equally-weighted, meaning individual indicators are in principle relatively-weighted depending on the absolute number of indicators making up each dimension. Formally the multidimensional poverty index (MPI) is expressed as:

$$MPI = \frac{1}{n} \sum_{i=1}^{n} OP_i, \text{ where}$$
$$OP_i = 1 \; if \; \sum_{x=1}^{d} w_x I_{ix} > k.$$

Here OP_i is a binary variable for overall poverty for household i, taking a value one if the aggregated and weighted indicators across all dimensions, $w_x I_{ix}$, are greater than the cut-off, k. Each dimension is equally-weighted and sums up to one meaning that each indicator is given a relative weight. Because our construction utilizes the same number of indicators however i.e. three, in practice each individual indicator is equally-weighted.

4. Data

We use data collected by Samuel Hall in conjunction with the Maastricht Graduate School of Governance for the independent evaluation of the UNHCR shelter assistance programme from 2009 to 2011. Although the original evaluation focused exclusively on UNHCR operations, the survey captured data for households receiving support from a number of other organizations including NRC, IOM and UN-HABITAT. The household survey which took place in late 2012 covered 4,017 households across 15 provinces of which over half, 51 per cent, reported receiving shelter assistance as indicated in Figure 2.

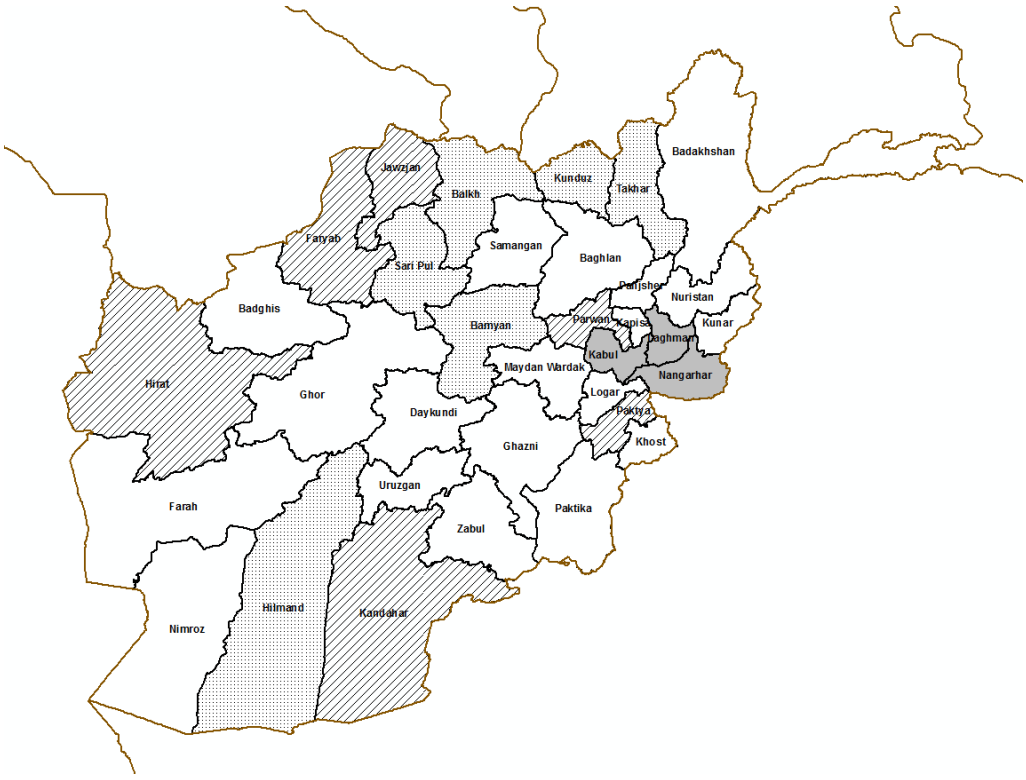
Since the focus of the initial evaluation was on UNHCR operations, sampling reflects the general distribution of their shelter activity.[13] 15 provinces within each of the country's eight regions were selected due to the presence of UNHCR shelter assistance, while also taking into account local security

[12] Alkire and Santos (2010); Alkire and Foster (2011); and Gassmann, Siegel, Vanore and Waidler (2012) all employ a 30 per cent cutoff. Our cutoff strays slightly from this level because in our construction all dimensions incorporate three individual indicators, making the 33 per cent cut-off more straightforward and appropriate.

[13] Because sampling reflects the general distribution of UNHCR's shelter activity, it is likely that there is an oversampling of those households receiving shelter assistance with respect to the population at large. Nevertheless, the matching approach should reduce any bias in our estimates due to this potential oversampling.

restrictions. Within provinces, one or more districts were selected for cluster sampling, with villages then randomly selected in light of a general record provided by UNHCR and implementing partners of their beneficiaries' locations. Within these villages, both beneficiary and non-beneficiary households were surveyed at random (MGSoG and Samuel Hall, 2013). The only location where operations by those organizations other than UNHCR were sampled was the eastern province of Nangarhar. Although these were spread out over 43 distinct villages across six separate districts, we restrict our focus only to the UNHCR programme in this paper.

Figure 2: Distribution of beneficiary households by province.



Source: MGSoG and Samuel Hall 2013. Provinces shaded in dots comprised up to 125 beneficiary households, those in single hatching up to 250 and those shaded in grey above 250. Please refer to Table A1 in the appendix for the exact numbers.

Summary statistics for the entire pre-matched sample based on the covariates employed in the propensity score matching are presented in Table 2. 52 per cent of the sample is a returnee refugee household while 26 per cent is a non-refugee returnee household, 14 per cent an IDP household and 12 per cent a household with no mobility. As expected, the percentage of refugee returnee households that are beneficiaries is statistically higher compared to non-beneficiaries given the eligibility criteria, whereas the opposite is true for all other subgroups, even though IDPs in principle constitute a target group. Likewise there is a statistical difference between households owning land, although, as previously discussed, this criterion was superseded by whether household were deemed extremely vulnerable. Nevertheless, of

those households recognized as vulnerable there is no statistical difference between beneficiary and non-beneficiary households; seemingly vulnerability was not a key criterion of the selection process.

Table 2: Summary Statistics of Covariates

	Full Sample		Shelter Assistance				
			Non-Beneficiary		*Beneficiary*		
Variable	Mean	SD	Mean	SD	Mean	SD	t-test
Selection Variables							
Subgroup Identification							
Refugee Returnee	51.73%	0.4998	36.47%	0.4815	66.63%	0.4716	***
Non-refugee Returnee	26.44%	0.4411	33.95%	0.4737	19.09%	0.3931	***
IDP	13.79%	0.3449	14.76%	0.3548	12.84%	0.3347	*
No Mobility	11.73%	0.3218	18.54%	0.3887	5.07%	0.2194	***
Land Ownership	44.86%	0.4974	42.32%	0.4942	47.34%	0.4994	***
Extremely Vulnerable	45.68%	0.4982	44.94%	0.4976	46.41%	0.4988	
Migration Variables							
Migrated: Pre-2001	67.19%	0.4696	59.38%	0.4913	74.84%	0.4340	***
Destination							
Pakistan	69.48%	0.4606	62.35%	0.4846	76.46%	0.4244	***
Iran	4.91%	0.2162	4.33%	0.2037	5.48%	0.2276	*
Other	0.05%	0.0223	0.00%	0.0000	0.10%	0.0314	
Returned: Post-2008	24.35%	0.4292	18.68%	0.3899	29.90%	0.4579	***
Returned: Home Ownership	29.64%	0.4567	25.79%	0.4376	33.40%	0.4718	***
Control Variables							
HH Size	8.93	4.9250	8.71	4.9445	9.15	4.8976	***
Married	86.81%	0.3385	85.94%	0.3476	87.65%	0.3291	
Educational Attainment							
No formal	80.60%	0.3955	79.27%	0.4055	81.90%	0.3851	**
Primary	12.27%	0.3281	12.50%	0.3308	12.05%	0.3256	
Secondary	5.75%	0.2328	6.61%	0.2484	4.91%	0.2161	**
Tertiary	1.38%	0.1167	1.63%	0.1265	1.14%	0.1062	
Ethnicity							
Pashtun	60.06%	0.4898	60.30%	0.4894	59.82%	0.4904	
Tajik	11.75%	0.3221	12.54%	0.3313	10.98%	0.3127	
Hazara	6.27%	0.2425	7.41%	0.2619	5.17%	0.2215	***
Uzbek	3.34%	0.1796	3.32%	0.1793	3.35%	0.1799	
Turkmen	6.10%	0.2394	6.05%	0.2384	6.15%	0.2404	
Baloch	1.07%	0.1029	0.81%	0.0894	1.33%	0.1146	
Other	11.40%	0.3179	9.57%	0.2943	13.20%	0.3385	***
Location Type							
Urban	18.60%	0.3891	20.81%	0.4060	16.44%	0.3707	***
Semi-rural	20.79%	0.4058	20.71%	0.4053	20.87%	0.4065	
Rural	60.62%	0.4887	58.49%	0.4929	62.70%	0.4837	***

Note: 130 villages are used as covariates as well, but not reported here. ***p<0.01, **p<.05, *p<0.10.

67 per cent of our sample moved prior to the Taliban's ouster in 2001 and 69 per cent went to Pakistan. Differences based on shelter assistance are statistically significant for both groups and favour beneficiary households. 24 per cent of refugees returned in the most recent period between 2009 and the time of survey (2012) and some 30 per cent owned a single-family house or apartment on return. This is

surprising considering the aim of the programme is to provide shelter when none is available and so it is obviously important to control for differences in initial housing in our analysis.

Beneficiaries' household size is slightly higher in comparison to their non-beneficiary counterparts, while around the same percentage of both groups are married. The vast majority of households have no formal education although this number is slightly higher for beneficiaries. Most households identify as Pashtun which is the group statistically more likely to receive shelter assistance, yet this observation is best explained by the concentration of sampling in Nangarhar province. Lastly, it is clear that rural households are more likely to benefit from shelter assistance, which is unsurprising given the programmes' stated focus on rural areas with high rates of return.

Table 3 presents household poverty within each dimension as well as across all dimensions using the earlier explained 33 per cent cutoff. A household is classified as dimensionally poor if deprived in more than a third of all indicators within that particular dimension and multidimensionally poor if deprived in more than a third of all indicators across dimensions.

Table 3: Dimensional & Multidimensional Poverty Index

	Full Sample	Shelter Assistance		
		Non-Beneficiary	*Beneficiary*	t-test
Dimension 1: Economic Welfare	67.61%	69.12%	66.14%	**
Dimension 2: Health & Education	41.31%	45.74%	37.07%	***
Dimension 3: Basic Services	22.01%	22.92%	21.11%	
Multidimensional Poverty Index	**63.37%**	**66.81%**	**60.08%**	***

Note: ***p<0.01, **p<.05, *p<0.10.

Table 4: Household Deprivation on each Indicator

	Full Sample	Shelter Assistance		
		Non-Beneficiary	*Beneficiary*	t-test
Dimension 1: Economic Welfare				
Debt-to-monthly income ratio is greater than 2	73.11%	73.55%	72.69%	
Less than 2 sources of income	76.60%	76.98%	76.23%	
Less than 2 types of assets	30.45%	31.44%	29.48%	
Dimension 2: Health & Education				
No meat eaten in the last week	43.47%	47.86%	39.17%	***
Problems satisfying food needs more than 3 times/month	35.80%	38.49%	33.17%	***
No school attendance for school-aged children	53.62%	54.73%	52.55%	
Dimension 3: Basic Services				
No electricity	47.85%	47.30%	48.38%	
No free, potable water	16.13%	17.03%	15.26%	
No heating	29.90%	31.13%	28.69%	*

Note: ***p<0.01, **p<.05, *p<0.10.

Over two-thirds of households are considered dimensionally poor on Dimension 1: Economic Welfare, under a half on Dimension 2: Health & Education, and just under a fourth along Dimension 3: Basic Services. There is a statistical difference between non-beneficiary and beneficiary households on both the first and second dimensions, with beneficiary households considered less dimensionally poor. Across dimensions, 63 per cent of the entire sample is deemed multidimensionally poor and those households benefiting from shelter assistance are less multidimensionally poor than those non-beneficiary households, a difference that is statistically significant.

Table 4 instead presents summary statistics on the percentage of household deprivation along each indicator for the entire pre-matched sample. Beginning with Dimension 1: Economic Welfare, around three-quarters of the entire sample is deprived in terms of both debt ratio and the number of income sources, and just under a third has less than two types of assets from the list of eight. There is no statistical difference for each between non-beneficiary households compared to beneficiary households. Along Dimension 2: Health & Education, under half of all households have not eaten meat within the last week, just over a third have problems satisfying food needs more than three times per month and a little more than a half do not send school-aged children to school. Deprivation for all but the latter dimension is higher and statistically different for non-beneficiary households. Finally for Dimension 3: Basic Services, just under of half of all households have no electricity, around a sixth have no free, potable water, and around a third have no heating. Only for this last indicator, heating, is deprivation slightly higher and statistically significant for non-beneficiary households.

5. Empirical Methodology

Our estimation strategy makes use of propensity score matching to minimize selection bias into the programme. This could arise from the fact that in principle assistance was targeted at a non-random population, even though in practice selection into the shelter assistance programme was broad-based and less systematic than expected. The parameter of interest is the average treatment effect on the treated (ATET) i.e. the change in outcome for a particular household that received assistance in comparison with that same household if they had hypothetically not received assistance, formally expressed as:

$$ATET_i = E(\Delta Y_i | T_i = 1) = E(Y_{i,1} | T_i = 1) - E(Y_{i,0} | T_i = 1)$$

where $Y_{i,1}$and $Y_{i,0}$ indicate the potential outcomes of treated household i, while $T_i = 1$ denotes observed treatment. Since we do not observe $E(Y_{i,0} | T_i = 1)$, we generate an appropriate counterfactual.

Propensity score matching is a two stage procedure. First, the predicted probability (or propensity score) that a household is selected into treatment is calculated from a series of observed characteristics, which is then used to match each treated observation with one or more controlled observations based on one of a variety of matching techniques. As long as two crucial conditions are met, unconfoundedness and presence of common support, a multivariate regression analysis is then able to provide an estimate of the treatment effect on the treated with minimized bias due to selection (Rosenbaum and Rubin, 1983).[14]

[14] Unconfoundedness can be formally expressed as:

$$Y_{i,0}, Y_{i.1} \perp T_i | X_i$$

In the first-stage to estimate the predicted probability of a household receiving treatment, we employ a probit regression model based on pre-treatment characteristics expressed as:

$$Pr(T_i = 1|X_i) = \phi\beta_i X_i$$

where T_i is the binary dependent variable indicating whether household i received shelter assistance. X_i represents a series of covariates comprising not only official programme selection criteria but also more general household characteristics as controls. These include household type (e.g. returned refugee, IDP etc.), type of migration (since migrants moving within and from Afghanistan at various times could have been selected due to the prevailing circumstances at those times), whether the household owns land and whether the household is deemed extremely vulnerable. In practice, a household is considered extremely vulnerable if they fall into any of the following categories: unaccompanied elderly (over 60), unaccompanied minor (under 18), physically disabled, mentally disabled, female-headed, elderly-headed, child-headed, chronically ill, survivor of gender-based violence, large family (5 or more children) and no livelihoods, very low income, single parent or drug addict. General household characteristics include household size, marital status, educational attainment, ethnicity, location type and village. Our choice of control variables stems from understanding that certain households are more likely to be selected into treatment outside of the official criteria. For example, households in certain villages may have a higher likelihood to receive assistance based on the areas' high rate of return and thus targeting by UNHCR and implementing partners. β_i represents the regression parameter to be estimated, and ϕ is the cumulative normal distribution function.

Following estimation of the propensity score, a number of matching techniques are applied to appropriately link treatment and control households. For robustness, we compare the results of nearest-neighbour matching, kernel-based matching and radius matching. The nearest-neighbour method matches treatment and control observations based on the closest propensity score. Including replacement of the control unit allows a control observation to be linked to more than one treatment observation. Setting a caliper restricts the closest match to within a certain distance. Kernel-based matching rather uses a weighted average that is inversely proportional to the distance between the propensity scores of the treated observation to all control observations. Radius matching similarly restricts matches to within a certain distance but instead uses all comparison members within that distance. The benefit of such a matching technique is it allows for oversampling when more than one good match exists, without the risk of a bad match (Caliendo and Kopeinig, 2008).

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and indicates potential outcomes are independent of treatment conditional on the pre-treatment characteristics, X_i. The unconfoundedness condition is satisfied if no unobservable factors contribute to a 'hidden bias' in our estimates. Even though it is not possible to directly test whether the unconfoundedness condition is satisfied or not, a sensitivity analysis following, for example, Rosenbaum's (2002) bounding approach helps to provide insight.

The second condition, the presence of common support, can be formally expressed as:

$$0 < \Pr(T_i = 1|X_i) < 1$$

and assures there are sufficient comparable treatment and control observations on which to make the assessment. Our ability to construct this artificial counterfactual is assisted by the lack of systematic selection into the shelter assistance program as mentioned prior, given the fact that official eligibility criteria for shelter assistance were not dutifully followed resulting in greater randomization than expected. As such, there is ample overlap, or area of common support, between the beneficiary and non-beneficiary groups on observable characteristics to make comparison.

Once generating a balanced match between treatment and control observations on an area of common support, we then run a multivariate regression model to ascertain the ATET for each outcome:

$$Outcome_i = \beta_0 + \beta_1 T_i + \beta_2 X_i + u_i$$

where $Outcome_i$ is any one of the poverty measurements of interest; T_i is treatment indicating shelter assistance; X_i is the vector of pre-characteristic control variables already mentioned; and $u_i$is an error term.

6. Results

We begin by estimating the predicated probability of treatment, or propensity score and proceed to use three separate matching techniques to link treatment and control observations on an area of common support. The three techniques employed are nearest-neighbour matching with replacement and a caliper set at 0.04, kernel-based matching using Epanechnikov kernel weights and radius matching using the same caliper of 0.04.[15] Once matched, the difference between treated and control households is the average treatment on the treated (ATET).

Table A2 in the appendix presents our first-stage results from a probit model determining the predicted probability, or propensity score, that a household benefits from shelter assistance.[16] We report marginal effects and t-statistics are provided in parentheses. We include both official selection criteria into the model as well as more generalized control variables including 130 village dummy variables (the results from which are not reported). Households containing a return refugee or IDP are 25 per cent more likely to receive shelter assistance. Households owning land and those categorized as extremely vulnerable are just four and three per cent more likely to benefit, respectively, in comparison to their counterparts. Larger households are more likely to benefit from shelter assistance, as are households with no formal education. *Ceteris paribus,* Pashtuns are less likely to receive assistance relative to the reference group 'other'. No statistical significant differences are found for other ethnic groups or households located in particular location types.

Table 5 presents several tests of the balancing powers for each of the three matching methods.[17] In comparing the before and after mean- and median-absolute-standardized-biases, we note each dropping considerably after matching, with both kernel-based and radius techniques offering the lowest biases. The fact that the bias before matching was not high suggests low systematic selection of beneficiaries in practice, meaning treatment was originally more random than expected. Furthermore, the p-values corresponding to the likelihood-ratio test of joint significance always rejects joint significance following matching. The relatively low pseudo-R^2 along each specification provides further evidence that there is no systematic difference between treatment and control observations after matching.

[15] We set the caliper following the rule of thumb that the optimal width is 0.2 of the standard deviation of the predicted probability model (Austin, 2011).
[16] See Figure A2 in the appendix for a visual representation of the pre-matched density of the propensity score for both non-beneficiary (control) and beneficiary (treatment) observations.
[17] See Figure A3 in the appendix for a visual representation of matching based on the propensity score.

Table 5: Balance Statistics

Sample	Pseudo R2	LR chi2	p>chi2	Mean Bias	Median Bias
Raw	0.14	739.77	0.00	5.60	3.50
Matched					
Nearest-neighbour	0.02	100.17	0.99	2.30	1.80
Kernel-based	0.01	51.72	1.00	1.50	1.10
Radius	0.01	52.55	1.00	1.50	1.10

Note: nearest-neighbour matching uses 2 neighbours within a caliper of 0.40; kernel-based matching uses an Epanechnikov kernel; radius matching within a caliper of 0.40.

Table 6 provides the ATET of shelter assistance on our broader (dimensional and multidimensional) measures of household poverty. We find robust evidence (across all matching techniques) that shelter assistance beneficiaries are better off in terms of multidimensional poverty indicated by the outcome variable *MPI*. Across matching specifications, beneficiary households are around six percentage points less multidimensionally poor with a high degree of statistical significance. The main dimension in which beneficiaries are better off is *Dimension 2: Health & Education*. In addition, beneficiary households are around three to four percentage points less poor along *Dimension 3: Basic Services*.

Table 6: Average Treatment Effect on the Treated (ATET) for DPI and MPI

Matching method	Outcome	ATET	S.E.	t-stat	N: treated	N: control
Nearest-neighbour	Dim1: Economic Welfare	-0.0149	0.0219	-0.68	1913	1973
	Dim2: Health & Education	-0.0556	0.0233	-2.39**	1810	1906
	Dim3: Basic Services	-0.0479	0.0198	-2.42**	1913	1973
	MPI	-0.0597	0.0224	-2.66***	1810	1906
Kernel-based	Dim1: Economic Welfare	-0.0193	0.0188	-1.03	1913	1973
	Dim2: Health & Education	-0.0624	0.0200	-3.12***	1810	1906
	Dim3: Basic Services	-0.0351	0.0169	-2.07**	1913	1973
	MPI	-0.0590	0.0193	-3.06***	1810	1906
Radius	Dim1: Economic Welfare	-0.0190	0.0188	-1.01	1913	1973
	Dim2: Health & Education	-0.0617	0.0201	-3.07***	1810	1906
	Dim3: Basic Services	-0.0355	0.0170	-2.09**	1913	1973
	MPI	-0.0590	0.0194	-3.05***	1810	1906

Note: nearest-neighbour matching uses 2 neighbour within a caliper of 0.40; kernel-based matching uses an Epanechnikov kernel; radius matching within a caliper of 0.40. ***p<0.01, **p<.05, *p<0.10.

Which aspects of poverty drive these results? Table 7 presents the ATET of shelter assistance for each individual indicator of deprivation. Beneficiary households are five to six percentage points less deprived in terms of dietary diversity, food security and heating. These former results are particularly important when considering the severity of malnutrition in Afghanistan. Greater dietary diversity and food security for beneficiary households may result from: less overcrowding among extended families, increased household income directed towards basic necessities or because of subsistence farming practices on newly acquired land. Our results on heating are more intuitive given that it is no doubt easier to keep warm with a roof over one's head.

Table 7: Average Treatment Effect on the Treated (ATET) for Individual Indicators

Matching method	Deprivation Outcome	ATET	S.E.	t-stat	N: treated	N: control
Nearest-neighbour	Debt Ratio	-0.0089	0.0207	-0.43	1913	1973
	Sources of Income	0.0310	0.0203	1.53	1913	1973
	Assets	-0.0280	0.0219	-1.28	1913	1973
	Dietary diversity	-0.0590	0.0233	-2.53**	1913	1973
	Food Security	-0.0608	0.0228	-2.67***	1913	1973
	School Attendance	-0.0034	0.0235	-0.15	1810	1908
	Electricity	-0.0120	0.0235	-0.51	1913	1973
	Water	-0.0014	0.0169	-0.08	1913	1973
	Heating	-0.0681	0.0218	-3.12***	1913	1973
Kernel-based	Debt Ratio	-0.0099	0.0178	-0.56	1913	1973
	Sources of Income	0.0292	0.0172	1.7	1913	1973
	Assets	-0.0276	0.0187	-1.47	1913	1973
	Dietary diversity	-0.0605	0.0201	-3.01***	1913	1973
	Food Security	-0.0517	0.0196	-2.64***	1913	1973
	School Attendance	-0.0164	0.0202	-0.81	1810	1908
	Electricity	-0.0072	0.0202	-0.36	1913	1973
	Water	-0.0004	0.0147	-0.03	1913	1973
	Heating	-0.0531	0.0187	-2.83***	1913	1973
Radius	Debt Ratio	-0.0097	0.0178	-0.55	1913	1973
	Sources of Income	0.0298	0.0172	1.73	1913	1973
	Assets	-0.0280	0.0188	-1.49	1913	1973
	Dietary diversity	-0.0601	0.0202	-2.98***	1913	1973
	Food Security	-0.0514	0.0196	-2.61***	1913	1973
	School Attendance	-0.0159	0.0203	-0.79	1810	1908
	Electricity	-0.0073	0.0203	-0.36	1913	1973
	Water	-0.0006	0.0148	-0.04	1913	1973
	Heating	-0.0539	0.0188	-2.86***	1913	1973

Note: nearest-neighbour matching uses 2 neighbours within a caliper of 0.40; kernel-based matching uses an Epanechnikov kernel; radius matching within a caliper of 0.40. ***p<0.01, **p<.05, *p<0.10.

Sensitivity Analysis

The results from propensity score matching are based on the assumption of unconfoundedness. This assumes selection into treatment is independent of potential outcomes given a set of observable characteristics. The influence of unobservable factors however may still be a concern giving rise to a "hidden bias" (Caliendo et al., 2005). To assess the robustness of our results in this regard we conduct a sensitivity analysis following Rosenbaum's (2002) bounding approach.[18]

[18] To this end, we employ the Stata package *mhbounds* by Becker and Caliendo (2007) which is appropriate when dealing with a binary outcome variable.

Tables 8 and 9 present the Mantel and Haenszel (1959) test statistic of the treatment effect for aggregated outcome *MPI* and individual outcome *Dietary Diversity*, respectively, when there is hypothetically no hidden bias (Γ=1) and when the hidden bias increases by increments of 0.05 until Γ=1.60. The results for all other statistically significant outcomes can be found in Tables A3-A6 in the appendix. The basic idea is to measure the amount of hidden bias necessary for unobservable factors to adversely influence our interpretation of the average treatment effect on the treated. Because of the negative estimated treatment effects for both *MPI* and *Dietary Diversity*, we focus on the bounds under the assumption that we have underestimated the true treatment effect (*Qmh*-) and its corresponding significance level (*pmh*-).

Table 8: Mantel-Haenszel Bounds for *Outcome = MPI*

Gamma (Γ)	Qmh+	Qmh-	pmh+	pmh-
Γ=1	4.1307	4.1307	0.0000	0.0000
Γ=1.05	4.8460	3.4172	0.0000	0.0003
Γ=1.10	5.5283	2.7370	0.0000	0.0031
Γ=1.15	6.1812	2.0874	0.0000	0.0184
Γ=1.20	6.8071	1.4658	0.0000	0.0714
Γ=1.25	7.4084	0.8698	0.0000	0.1922
Γ=1.30	7.9870	0.2972	0.0000	0.3832
Γ=1.35	8.5446	0.1851	0.0000	0.4266
Γ=1.40	9.0828	0.7160	0.0000	0.2370
Γ=1.45	9.6030	1.2282	0.0000	0.1097
Γ=1.50	10.1064	1.7232	0.0000	0.0424
Γ=1.60	11.0673	2.6660	0.0000	0.0038

Note: radius matching method with caliper of 0.40. Gamma (Γ): odds of differential assignment due to unobserved factors. Q_mh+: Mantel-Haenszel statistic (assumption: overestimation of treatment effect). Q_mh-: Mantel-Haenszel statistic (assumption: underestimation of treatment effect). p_mh+: significance level (assumption: overestimation of treatment effect). p_mh-: significance level (assumption: underestimation of treatment effect).

Table 9: Mantel-Haenszel Bounds for *Outcome = Dietary Diversity*

Gamma (Γ)	Qmh+	Qmh-	pmh+	pmh-
Γ=1	5.6214	5.6214	0.0000	0.0000
Γ=1.05	6.3604	4.8848	0.0000	0.0000
Γ=1.10	7.0653	4.1825	0.0000	0.0000
Γ=1.15	7.7397	3.5119	0.0000	0.0002
Γ=1.20	8.3863	2.8704	0.0000	0.0021
Γ=1.25	9.0075	2.2553	0.0000	0.0121
Γ=1.30	9.6053	1.6646	0.0000	0.0480
Γ=1.35	10.1814	1.0963	0.0000	0.1365
Γ=1.40	10.7374	0.5488	0.0000	0.2916
Γ=1.45	11.2749	0.0206	0.0000	0.4918
Γ=1.50	11.7950	0.4233	0.0000	0.3361
Γ=1.60	12.7876	1.3948	0.0000	0.0815

Note: radius matching method with caliper of 0.40. Gamma (Γ): odds of differential assignment due to unobserved factors. Q_mh+: Mantel-Haenszel statistic (assumption: overestimation of treatment effect). Q_mh-: Mantel-Haenszel statistic (assumption: underestimation of treatment effect). p_mh+: significance level (assumption: overestimation of treatment effect). p_mh-: significance level (assumption: underestimation of treatment effect).

For *MPI*, the treatment effect under the assumption of no hidden bias (Γ=1) is significant corroborating our results, but loses significance at a relatively low level of gamma (Γ=1.25). This critical value suggests

the treatment effect is sensitive to bias to the extent that individuals with the same x-vector of covariates differ in their odds of participation by a factor of 25 per cent. For *Dietary Diversity*, the treatment effect under the assumption of no hidden bias remains highly until gamma reaches 1.35. Overall, the sensitivity analysis suggests that we can be confident that unobserved heterogeneity is not driving our results.

7. Conclusion

In this study we conduct a rigorous impact evaluation of the UNHCR shelter assistance programme in Afghanistan over the period 2009 to 2011. Our motivation stems from the fact that post-return assistance and more specifically the resolution of lost housing and property, is commonly understood as a key ingredient in sustainable return and reintegration. We adopt a multidimensional approach to poverty in order to holistically measure the impact of assistance on household well-being over a range of socio-economic indicators.

Our analysis finds that shelter assistance has a statistically significant and negative effect on multidimensional poverty, as beneficiary households are six percentage points less deprived overall than their non-beneficiary counterparts. In terms of the individual indicators driving this result, beneficiaries are five to six percentage points better off when it comes to dietary diversity, food security and heating. Therefore according to our findings, the shelter assistance programme in Afghanistan provides a clear benefit aside from basic accommodation. Taking into consideration the severity of chronic malnutrition throughout Afghanistan, the results regarding food security and dietary diversity are particularly encouraging. Nevertheless, it is important to bear in mind the magnitude of our results.

Given the broad objectives of the UNHCR programme, we find little evidence to suggest that shelter assistance greatly contributes to improving the livelihood potential of the beneficiary households since the impact of the programme on household debt, the number of income sources and school attendance are all statistically insignificant. It might therefore be prudent to roll back any overly-ambitious expectations of the programme having an immediate effect on households' livelihoods, and rather describe shelter assistance in its current form as a valuable humanitarian intervention that provides much needed basic support to some of the most vulnerable households in the community.

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Appendix

Table A1: Sample

	Shelter Assistance		
Province	*Non-Beneficiary*	*Beneficiary*	Total
Kabul	184	195	379
	9.27%	9.60%	9.43%
Parwan	85	101	186
	4.28%	4.97%	4.63%
Bamyan	29	32	61
	1.46%	1.57%	1.52%
Laghman	138	162	300
	6.95%	7.97%	7.47%
Nangarhar	819	789	1,608
	41.26%	38.83%	40.03%
Balkh	51	50	101
	2.57%	2.46%	2.51%
Faryab	97	75	172
	4.89%	3.69%	4.28%
Jawzjan	100	118	218
	5.04%	5.81%	5.43%
Sari Pul	44	56	100
	2.22%	2.76%	2.49%
Kunduz	60	60	120
	3.02%	2.95%	2.99%
Takhar	31	39	70
	1.56%	1.92%	1.74%
Helmand	52	56	108
	2.62%	2.76%	2.69%
Kandahar	79	75	154
	3.98%	2.76%	2.69%
Paktya	117	123	240
	5.89%	6.05%	5.97%
Hirat	99	101	200
	4.99%	4.97%	4.98%
Total	1,985	2,032	4,017
	100%	100%	100%

Table A2: Results from first-stage Probit

	Marginal Effect
Selection Variables	
Subgroup Identification	
Refugee Returnee	0.1818***
	-3.64
Non-Refugee Returnee	-0.0932*
	(-1.82)
IDP	-0.0722
	(-1.09)
No mobility	-0.2762***
	(-3.53)
HH Owns Land	0.0282
	-1.6
Extremely Vulnerable	0.0362**
	-2.34
Migration Variables	
Migrated: Pre-2001	0.0222
	-0.73
Destination: Pakistan	-0.0870*
	(-1.72)
Returned: Post-2008	0.0574***
	-2.84
Returned: House Ownership	0.0305
	-1.63
Control Variables	
Household Size	0.0063***
	-3.81
Married	0.003
	-0.13
Educational Attainment	
No formal	0.0925
	-1.5
Primary	0.058
	-0.9
Secondary	0.0006
	-0.01
Ethnicity	
Pashtun	-0.0851**
	(-2.39)
Tajik	-0.0740*
	(-1.91)
Hazara	-0.1568*
	(-1.67)
Uzbek	0.0275
	-0.32
Turkmen	-0.093
	(-0.61)
Baloch	-0.072
	(-0.28)

Location Type	
Urban	0.1294*
	-1.83
Semi-Rural	-0.0025
	(-0.05)
Village dummies (130)	
R2	
N	3888

Note: reference categories include "tertiary education", "other ethnicity", and "rural location type". *** p<0.01, ** p<0.05, * p<0.10.

Table A3: Mantel-Haenszel Bounds for *Outcome = Dim2: Health & Education*

Gamma (Γ)	Qmh+	Qmh-	pmh+	pmh-
Γ=1	5.2572	5.2572	0.0000	0.0000
Γ=1.05	5.9915	4.5250	0.0000	0.0000
Γ=1.10	6.6920	3.8270	0.0000	0.0001
Γ=1.15	7.3622	3.1605	0.0000	0.0008
Γ=1.20	8.0048	2.5228	0.0000	0.0058
Γ=1.25	8.6222	1.9114	0.0000	0.0280
Γ=1.30	9.2162	1.3242	0.0000	0.0927
Γ=1.35	9.7887	0.7593	0.0000	0.2239
Γ=1.40	10.3413	0.2150	0.0000	0.4149
Γ=1.45	10.8754	0.2434	0.0000	0.4039
Γ=1.50	11.3923	0.7507	0.0000	0.2264
Γ=1.60	12.3788	1.7167	0.0000	0.0430

Note: radius matching method with caliper of 0.40. Gamma (Γ): odds of differential assignment due to unobserved factors. Q_mh+: Mantel-Haenszel statistic (assumption: overestimation of treatment effect). Q_mh-: Mantel-Haenszel statistic (assumption: underestimation of treatment effect). p_mh+: significance level (assumption: overestimation of treatment effect). p_mh-: significance level (assumption: underestimation of treatment effect).

Table A4: Mantel-Haenszel Bounds for *Outcome = Dim3: Basic Services*

Gamma (Γ)	Qmh+	Qmh-	pmh+	pmh-
Γ=1	1.2343	1.2343	0.1085	0.1085
Γ=1.05	1.8519	0.6174	0.0320	0.2685
Γ=1.10	2.4410	0.0293	0.0073	0.4883
Γ=1.15	3.0046	0.4536	0.0013	0.3250
Γ=1.20	3.5449	0.9918	0.0002	0.1606
Γ=1.25	4.0638	1.5082	0.0000	0.0658
Γ=1.30	4.5632	2.0046	0.0000	0.0225
Γ=1.35	5.0445	2.4826	0.0000	0.0065
Γ=1.40	5.5092	2.9437	0.0000	0.0016
Γ=1.45	5.9584	3.3890	0.0000	0.0004
Γ=1.50	6.3933	3.8197	0.0000	0.0001
Γ=1.60	7.2237	4.6412	0.0000	0.0000

Note: radius matching method with caliper of 0.40. Gamma (Γ): odds of differential assignment due to unobserved factors. Q_mh+: Mantel-Haenszel statistic (assumption: overestimation of treatment effect). Q_mh-: Mantel-Haenszel statistic (assumption: underestimation of treatment effect). p_mh+: significance level (assumption: overestimation of treatment effect). p_mh-: significance level (assumption: underestimation of treatment effect).

Table A5: Mantel-Haenszel Bounds for *Outcome = Food Security*

Gamma (Γ)	Qmh+	Qmh-	pmh+	pmh-
Γ=1	3.6108	3.6108	0.0002	0.0002
Γ=1.05	4.3268	2.8964	0.0000	0.0019
Γ=1.10	5.0097	2.2154	0.0000	0.0134
Γ=1.15	5.6631	1.5649	0.0000	0.0588
Γ=1.20	6.2895	0.9423	0.0000	0.1730
Γ=1.25	6.8911	0.3453	0.0000	0.3649
Γ=1.30	7.4699	0.1598	0.0000	0.4365
Γ=1.35	8.0278	0.7117	0.0000	0.2383
Γ=1.40	8.5662	1.2436	0.0000	0.1068
Γ=1.45	9.0866	1.7569	0.0000	0.0395
Γ=1.50	9.5901	2.2530	0.0000	0.0121
Γ=1.60	10.5512	3.1980	0.0000	0.0007

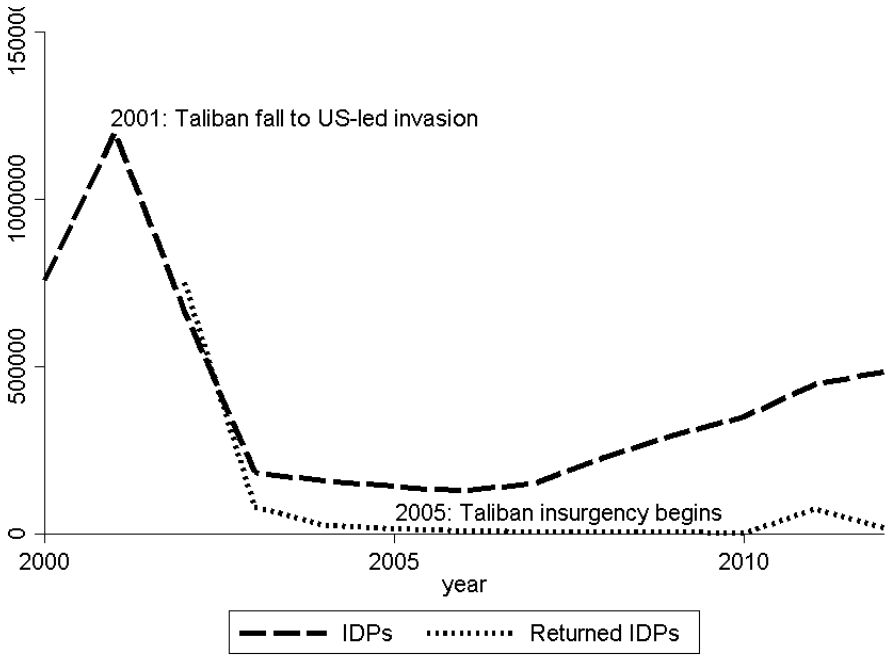
Note: radius matching method with caliper of 0.40. Gamma (Γ): odds of differential assignment due to unobserved factors. Q_mh+: Mantel-Haenszel statistic (assumption: overestimation of treatment effect). Q_mh-: Mantel-Haenszel statistic (assumption: underestimation of treatment effect). p_mh+: significance level (assumption: overestimation of treatment effect). p_mh-: significance level (assumption: underestimation of treatment effect).

Table A6: Mantel-Haenszel Bounds for *Outcome = Heating*

Gamma (Γ)	Qmh+	Qmh-	pmh+	pmh-
Γ=1	1.6858	1.6858	0.0459	0.0459
Γ=1.05	2.3713	1.0010	0.0089	0.1584
Γ=1.10	3.0253	0.3481	0.0012	0.3639
Γ=1.15	3.6507	0.2044	0.0001	0.4190
Γ=1.20	4.2501	0.8017	0.0000	0.2114
Γ=1.25	4.8257	1.3747	0.0000	0.0846
Γ=1.30	5.3794	1.9254	0.0000	0.0271
Γ=1.35	5.9129	2.4556	0.0000	0.0070
Γ=1.40	6.4278	2.9668	0.0000	0.0015
Γ=1.45	6.9254	3.4604	0.0000	0.0003
Γ=1.50	7.4068	3.9377	0.0000	0.0000
Γ=1.60	8.3256	4.8474	0.0000	0.0000

Note: radius matching method with caliper of 0.40. Gamma (Γ): odds of differential assignment due to unobserved factors. Q_mh+: Mantel-Haenszel statistic (assumption: overestimation of treatment effect). Q_mh-: Mantel-Haenszel statistic (assumption: underestimation of treatment effect). p_mh+: significance level (assumption: overestimation of treatment effect). p_mh-: significance level (assumption: underestimation of treatment effect).

Figure A1: IDPs and return IDPs stocks 2000-2012



Source: UNHCR (2014)

Figure A2: Pre-match density of the propensity score

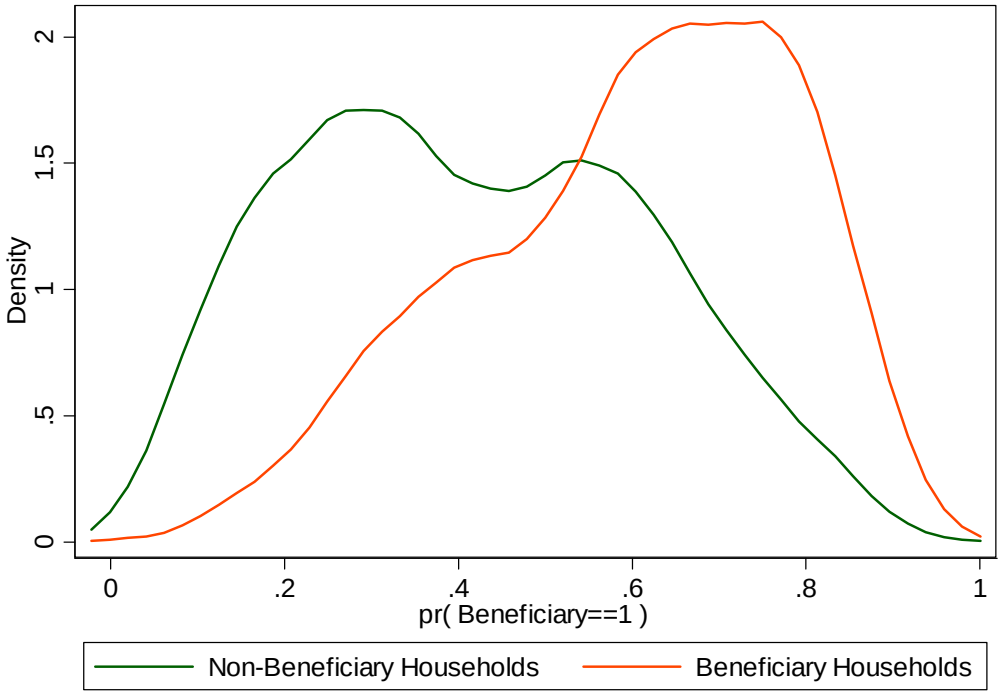
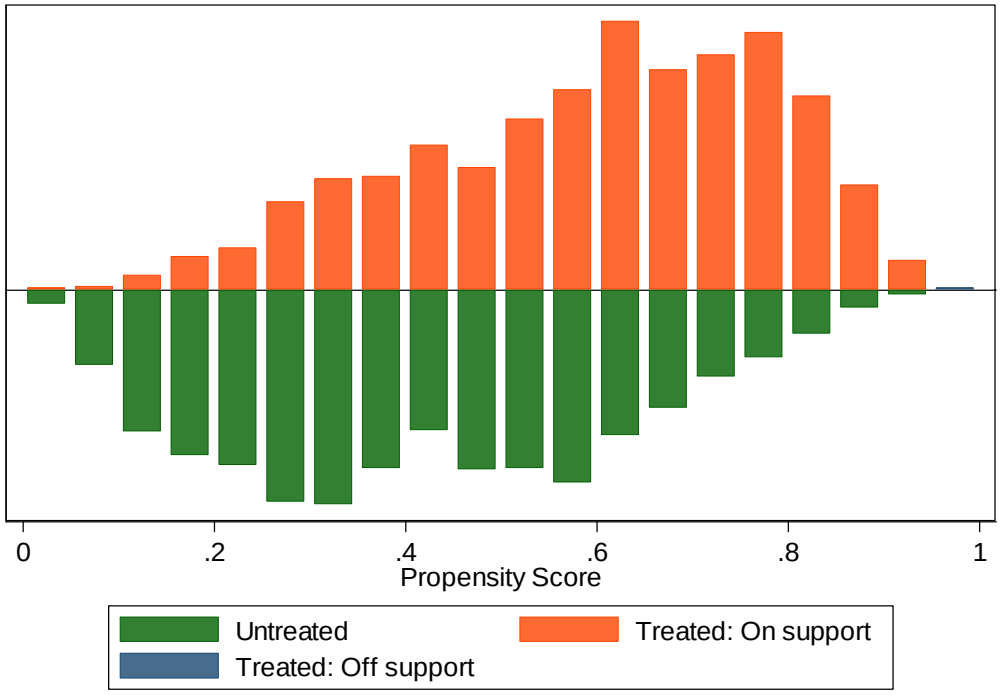


Figure A3: Matching based on the propensity score



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